

IN THE CLAIMS:

The following is a complete listing of the claims in this application, reflects all changes currently being made to the claims, and replaces all earlier versions and all earlier listings of the claims:

Claim 1. (Currently Amended) A back side incident type fingerprint image ~~pickup~~ sensor having on the front side of a semiconductor substrate a photoelectric conversion portion and an electric circuit, and having on the back side of the semiconductor substrate an opening through which a light containing infrared radiation ~~radiation beam~~ is incident, the incident light containing infrared radiation ~~radiation beam~~ being detected by the photoelectric conversion portion formed on the front side of the semiconductor substrate, wherein a distance, in a direction parallel to the semiconductor substrate, between the electric circuit on the front side of the semiconductor substrate and an edge of the opening on the back side of the semiconductor substrate is 0.303 times the thickness of the semiconductor substrate or more ~~the electric circuit is disposed at a given distance in the horizontal direction from the opening.~~

Claim 2. (Currently Amended) A back side incident type fingerprint image ~~pickup~~ sensor according to claim 1, wherein the semiconductor substrate is a single crystal silicon substrate.

Claim 3. (Currently Amended) A back side incident type fingerprint image ~~pickup~~ sensor according to claim 1, wherein the semiconductor substrate is reduced in thickness

after a semiconductor integrated circuit that constitutes the photoelectric conversion portion is formed.

Claim 4. (Original) A back side incident type image pickup sensor according to claim 1, wherein the radiation beam is infrared light.

Claim 5. (Currently Amended) A back side incident type fingerprint image pickup sensor according to claim 4, wherein the infrared light has a wavelength in a range of 975 to 1150 nm.

Claim 6. (Original) A back side incident type image pickup sensor according to claim 1, wherein the radiation beam is an X-ray.

Claim 7. (Currently Amended) A back side incident type fingerprint image pickup sensor according to claim 1, wherein the photoelectric conversion portion is composed of a photodiode.

Claim 8. (Currently Amended) A back side incident type fingerprint image pickup sensor according to claim 1, wherein the electric circuit serves as one of a driver circuit for driving the photoelectric conversion portion and a signal processing circuit for processing a signal from the photoelectric conversion portion.

Claim 9. (Original) A back side incident type image pickup sensor according to claim 1, wherein the given distance is 0.303 times the thickness of the semiconductor substrate or more.

Claim 10. (Currently Amended) A back side incident type fingerprint image ~~pickup~~ sensor according to claim 1, wherein the given distance is 50 μm or more.

Claim 11. (Currently Amended) A back side incident type fingerprint image ~~pickup~~ sensor according to claim 1, further comprising:

a dummy pixel formed in an offset portion between the electric circuit on the front side of the semiconductor substrate and the opening configured to remove an electric charge in the offset portion.

Claim 12. (Currently Amended) A back side incident type fingerprint image ~~pickup~~ sensor according to claim 1, further comprising:

a diffusion region disposed between the electric circuit and the fingerprint sensor on the front side of the semiconductor substrate, wherein the diffusion region has the same conductivity type as the semiconductor substrate, contains an impurity of concentration higher than the semiconductor substrate and is fixed at a constant potential ~~formed in an offset portion between the electric circuit on the front side of the semiconductor substrate and the opening configured to remove an electric charge in the offset portion.~~